Advanced Materials for Membrane-Based Gas Separation Technology

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Abstract

Gas separation by membrane is nowadays considered to be a proven technology, which has gained an important place in chemical technology and has been used in a broad range of applications. Markets of membrane gas separation systems have grown to become a $ 150 million/year. However, a much larger potential market for membrane gas separation lies in separating gas mixture. These applications require the development of new membranes and processes. For polymer used as gas separations membranes both high permeability and high selectivity are essential to minimize capital and operations cost. Therefore, the relationships between membrane structure and performance have become important studies in the field of membrane based-gas separation. This paper examines the progress in material development as well as methods to prepare membranes for gas separation. Some of the most important theoretical gas transports in polymers are also discussed. In the addition, the recent and future prospects in membrane-based gas separation technology are also discussed.

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